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Application No. (if known): 09/875,369 Attorney Docket No.:02309/000J434-US0

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Supplemental Amendment under 37 CFR § 1.116 (6 pages);
Amendment Transmittal Letter (1 page);
~~Notice of Appeal (1 page);~~ Appeal Brief Transmittal (1) Pg
Appellants' Brief (26 pages) with Exhibits A-D;
~~Petition for Extension of Time (1 page);~~
Fee Transmittal (1 page);
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FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 330.00

Complete if Known	
Application Number	09/875,369
Filing Date	June 5, 2001
First Named Inventor	Kengo Ochi
Examiner Name	K. S. Smith
Art Unit	3644
Attorney Docket No.	02309/000J434-US0

METHOD OF PAYMENT *(check all that apply)*

☒ Check ☐ Credit Card ☐ Money Order ☐ Other ☐ None

☐ Deposit Account:

Deposit Account Number: 04-0100

Deposit Account Name: Darby & Darby P.C.

The Director is authorized to: *(check all that apply)*

☐ Charge fee(s) indicated below ☒ Credit any overpayments

☒ Charge any additional fee(s) or any underpayment of fee(s)

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FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1) ($) 0.00

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

		Extra Claims		Fee from below		Fee Paid
Total Claims	-** =		x		=	
Independent Claims	-** =		x		=	
Multiple Dependent					=	

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) 0.00

***or number previously paid, if greater; For Reissues, see above*

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge – late filing fee or oath	
1052	50	2052	25	Surcharge – late provisional filing fee or cover sheet.	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for *ex parte* reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	330.00
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive – unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37CFR 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify)

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) ($) 330.00

SUBMITTED BY				(Complete *(if applicable)*)	
Name (Print/Type)	Dianna Goldenson	*Registration No. (Attorney/Agent)*	52,949	*Telephone*	(212) 527-7700
Signature	Dianna Goldenson			*Date*	June 16, 2004

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TRANSMITTAL OF APPEAL BRIEF

Docket No.
02309/000J434-US0

In re Application of: Kengo Ochi et al.

Application No.	Filing Date	Examiner	Group Art Unit
09/875,369	June 5, 2001	K. S. Smith	3644

Invention: ANIMAL EXCRETIONS-TREATING MATERIAL CAPABLE OF BEING DISPOSED OF IN FLUSH TOILETS

TO THE COMMISSIONER OF PATENTS:

Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed: April 16, 2004 .

The fee for filing this Appeal Brief is 330.00 .

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Dianna Goldenson

Dated: June 16, 2004

Dianna Goldenson
Attorney Reg. No. : 52,949
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Customer No.: 07278 Docket No: 02309/000J434-US0

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 09/875,369 Art Unit: 3644

Applicant : Kengo OCHI; Takeshi IKEGAMI

Filed : June 5, 2001 Examiner: SMITH, Kimberly S.

Title : ANIMAL EXCRETIONS-TREATING MATERIAL CAPABLE OF BEING DISPOSED OF IN FLUSH TOILETS

APPELLANTS' BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

June 16, 2004

Sir:

This brief is filed pursuant to the provisions of 37 CFR § 1.192. A Notice of Appeal was timely filed on April 16, 2004. This brief is submitted in triplicate and is accompanied by the fee set forth in 37 CFR § 1.17(c).

(1) Real Party in Interest

The real party in interest is the assignee, Unicharm PetCare Corporation, a corporation of Japan.

(2) Related Appeals and Interferences

There are no other appeals or interferences known to Appellants, Appellants' legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

(3) Status of Claims

Claims 1-12 and 14 are pending in the application. All of the claims have been rejected and all are being appealed. Claims 1-12 and 14 are enclosed as Exhibit A.

(4) Status of Amendments

Claims 1-13 were finally rejected under 35 U.S.C. § 103(a) in a Final Office Action mailed October 16, 2003, in which the Examiner also objected to the specification. Appellants filed an "Amendment Under 37 C.F.R. § 1.116" on February 17, 2004 requesting reconsideration of the final rejections. In an Advisory Action dated March 23, 2004, the Examiner indicated that the response did not place the application in condition for allowance, but stated that for purposes of appeal the proposed amendment would be entered.

Additionally, submitted concurrently herewith is a Supplemental Amendment under 37 C.F.R. § 1.116, in which claim 4 has been amended, claim 13 has been canceled, and claim 14 has been added. The amendment is provided to expedite

resolution of this case. Furthermore, the submitted claim amendments do not introduce new matter, nor do the amendments raise new issues that would require a new search. Therefore, Appellants respectfully request entry of the amendment and consideration of claims 1-12 and 14.

(5) Summary of Invention

The present invention relates to a water-decomposable material that is used for treating animal excretions and may be disposed of in flush toilets (p. 3, second full paragraph). This material comprises particles composed of a core layer and a skin layer. The core layer comprises fibers. The skin layer covers the core layer and comprises fibers and α-starch (p. 3, third full paragraph).

In a container of the present material, excretions may be rapidly absorbed by the fibers in the skin layer of the particles. The water contained in the absorbed excretions reacts with the α-starch in the skin layer, making the α-starch sticky and more viscous (p. 4, first full paragraph; p. 9, first full paragraph). Because the skin layer becomes sticky, the particles contacted by excretions adhere to each other and readily mass into a solid (p. 4, first full paragraph; p. 9, first full paragraph). The solidified mass may then be removed and disposed of in a flush toilet, allowing the particles that were not soiled by excretions to remain in the container (p. 9, first full paragraph to end of page; p. 13, second full paragraph).

The α-starch in the skin layer also acts to absorb water from excretions and to transfer that water into the core of the particle, thereby reducing the amount of water in the skin layer (p. 9, first full paragraph). Consequently, the α-starch of the present invention has the dual function of both (i) promoting particle agglomeration by making the particles sticky and (ii) absorbing water from excretions and then transferring that water to the particle core.

In one embodiment of the invention, the α-starch in the skin layer is derived from tapioca α-starch (p. 5, second full paragraph; p. 7, first full paragraph).

A cross-sectional view of a particle of the present animal excretions-treating material is shown in Figure 1 of the present application, including the core layer 2 comprising fibers 4, and the skin layer 3 comprising fibers 5 and α-starch 6.

The molecular formula of α-starch is well known in the art as $(C_6H_{10}O_5)_n$. *See* Exhibit B: NIOSH Pocket Guide to Chemical Hazards, *Starch*. Thus, α-starch comprises glucopyranose rings. It is proper for the Board of Patent Appeals and Interferences to consider this evidence for the applicants' purpose of establishing the meaning of the term "α-starch" to persons having ordinary skill in the art. *See Martin v. Mayer*, 823 F.2d 500, 504 (Fed. Cir. 1987) (citing *Philips v. Matthews*, 197 USPQ 776, 777-78 (BPAI 1977), in which the Board held that "a party may introduce dictionaries and textbooks for the purpose of establishing facts such as the meaning of various terms to those skilled in the art and the properties of various materials.").

(6) Issues

(a) Does the combination of Sasahara (Japanese Patent Publication No. 11-032608) ("Sasahara") and McPherson et al. (U.S. Patent No. 6,405,677) ("McPherson") render claims 1-5 and 7-13 unpatentable under 35 U.S.C. § 103(a)?

(b) Does the combination of Sasahara in view of McPherson and further in view of Chikazawa (U.S. Patent No. 5,209,185) ("Chikazawa") render claim 6 unpatentable under 35 U.S.C. § 103(a)?

(c) Does the specification provide proper antecedent basis for the terminology recited in claim 13?

(7) Grouping of Claims

The Examiner's final rejections of claims 1-5 and 7-13 and of claim 6 are based on similar alleged grounds of obviousness. Nevertheless, Appellants submit that the pending claims (i.e., claims 1-12 and 14) represent three separately patentable inventions and request that the claims be grouped accordingly.

Claims 1-5 and 7-12 represent various embodiments of the present invention containing α-starch, whereas claim 6 specifically recites that the α-starch is tapioca α-starch. The genus of different types of starch contained in the particles of the present invention render the compositions of claims 1-5 and 7-12 separately

patentable from the composition of claim 6, which specifically calls for one species of α-starch. Furthermore, claim 4 and new claim 14, which depends from claim 4, specifically recite ranges of ratios of α-starch to fibers in the skin layer. The particular ratios of α-starch to fibers in claims 4 and 14 render the compositions of claims 4 and 14 separately patentable from the compositions of claims 1-3 and 5-12.

Accordingly, the following three groups of claims are separately patentable:

Group I: claims 1-3, 5, and 7-12

Group II: claim 6

Group III: claims 4 and 14

(8) Argument

(a) Claims 1-5 and 7-12 Are Non-Obvious

In a Final Office Action mailed October 16, 2003, the Examiner rejected claims 1-5 and 7-13 under 35 U.S.C. § 103(a) as being obvious over Sasahara in view of McPherson. The Examiner erroneously assumes, *inter alia*, that: (i) α-starch is the same as the water absorbing polymer powder disclosed in Sasahara; and (ii) Sasahara is related to particle agglomeration. Sasahara and McPherson are discussed in more detail below.

Sasahara discloses an animal excretion-treatment material made from compressed granular bodies having a two layer structure, which includes: (i) a

compressed core formed from hydrophilic organic fibers, and (ii) a coating layer formed from a combination of organic fiber powder and "water absorbing polymer powder, such as polyvinyl alcohol, carboxymethyl cellulose or hydroxyethyl cellulose or the like" (p. 5, ll. 13-19; p. 6, ll. 8-10). Sasahara does not disclose α-starch, either expressly or inherently. The Examiner acknowledged this fact on page 3 of the October 16, 2003 Final Office Action, stating that "Sasahara does not positively disclose the use of alpha starches."

It is well known in the art that the molecular formula of polyvinyl alcohol is $(C_2H_4O)_n$. *See* Exhibit C: Material Safety Data Sheet, *Polyvinyl Alcohol*. As noted earlier, it is well established that the Board may take notice of facts beyond the record which, while not generally notorious, are capable of such instant and unquestionable demonstration as to defy dispute. *In re Ahlert*, 424 F.2d 1088, 1091 (CCPA 1970) (citing *In re Knapp Monarch Co.*, 296 F.2d 230 (CCPA 1961)); *see also Martin*, 823 F.2d at 504. Thus, polyvinyl alcohol differs from α-starch in terms of its chemical structure because the chemical formula of α-starch is $(C_6H_{10}O_5)_n$, whereas the chemical formula of polyvinyl alcohol is $(C_2H_4O)_n$. These two compounds are not the same because, *inter alia*, α-starch comprises glucopyranose rings whereas polyvinyl alcohol has no rings.

Carboxymethyl cellulose and hydroxyethyl cellulose differ significantly from α-starch based on their chemical structures as well. Starches comprise 1,4-α-linked glucopyranose rings, whereas cellulose is made up of 1,4-β-linked glucopyranose

rings. CHRISTOPHER K. MATHEWS & K.E. VAN HOLDE, BIOCHEMISTRY 285 (1990) (Exhibit D). *See also Martin*, 823 F.2d at 504; *In re Ahlert*, 424 F.2d at 1091. "This seemingly small difference from starch has remarkable structural consequences." Exhibit D: MATHEWS & VAN HOLDE, BIOCHEMISTRY 285. Thus, carboxymethyl cellulose and hydroxyethyl cellulose are not the same as α-starch because, *inter alia*, the glucopyranose rings of α-starch are 1,4-α-linked wheras those of the cellulose compounds are 1,4-β-linked.

No other water absorbing polymer powders are exemplified in Sasahara.

Sasahara also fails to disclose that its material agglomerates or clumps together after absorbing excretions. Sasahara states that an object of its invention is "to provide an excrement-treatment material achieving high shape stability and static stability and high water absorbing ability" (p. 5, ll. 9-13). In particular, Sasahara points out that moisture captured in the surface of its granular bodies quickly penetrates to the organic fibers of the core by capillary action (p. 12, ll. 17-23). Excess moisture is easily transferred to other granular bodies through mutual contact, thereby preventing "breakdown of shape" due to swelling of the water absorbing polymer powder in the surface layer (p. 12, l. 23 to p. 13, l. 4). Agglomeration is not an object of Sasahara's material. Rather, high shape stability , the opposite of agglomeration, is an object that is reiterated throughout this reference (*see, e.g.*, p. 12, l. 23 to p. 13, l. 4). If the granular bodies agglomerated, their shape would not be maintained as Sasahara repeatedly asserts.

Furthermore, Sasahara states that prior art excrement-treatment materials may be kept in an excrement container and regularly exchanged (p. 3, ll. 9-14). With respect to this feature, Sasahara does not distinguish its material from prior art materials in any way. Additionally, Sasahara states that its material can be disposed of in a flush toilet or by incineration (p. 15, ll. 2-5), but again fails to teach or suggest that its material can clump together upon absorbing excretions such that only the agglomerated clumps need be disposed by flushing. Thus, there is simply no disclosure in Sasahara to teach or suggest that agglomeration is either an intended object or even an inherent feature of the invention. Rather, Sasahara's excrement-treatment material is simply exchanged as a whole – i.e., all of Sasahara's excrement-treatment material in an excrement container is disposed of at once before the excrement container is refilled.

The second reference cited by the Examiner is McPherson, which discloses a grain-based animal litter comprising discrete particles that agglomerate when wetted (col. 1, ll. 21-24). McPherson's particles do not have a skin layer. Rather, the particles are made essentially from seed meal, which may be combined with other components, such as a mold inhibitor or a "cohesiveness agent," prior to pelletizing (col. 2, ll. 44-47; col. 7, ll. 20-23). McPherson teaches away from the use of α-starch (a pre-gelatinized, modified starch) as a suitable cohesiveness agent by stating that "*non-gelatinized, unmodified starches* are especially suitable for use as cohesiveness agents in conjunction with the invention" (col. 4, ll. 64-67;

emphasis added). Moreover, McPherson states that the function of its cohesiveness agent is *not* to promote interparticle adhesion (i.e., agglomeration) (col. 4, ll. 54-57). Rather, McPherson provides that its cohesiveness agent is employed to affect "intraparticle cohesion" and that the agglomeration that occurs is "believed to result primarily as a result of the interaction of proteins or other components present by virtue of the seed meal and/or the grain-based substrate, and is not believed to result from adhesion forces generated through the use of starch" (col. 4, ll. 58-64). Thus, McPherson not only teaches away from the use of modified starches, such as α-starch in particular, but also further discourages the use of starches in general for the purpose of promoting agglomeration. In any event, if, as the Examiner asserts, McPherson teaches the use of α-starch, it teaches such use only in conjunction with grain-based litters and not with fiber-based litters, as presently claimed, much less with skin-core based fiber litters, also as presently claimed.

* * * * *

For a claim to be obvious under 35 U.S.C. § 103, three criteria must be satisfied: (i) there must be some suggestion or motivation to combine or modify the cited references, (ii) there must be a reasonable expectation of success of combining or modifying the cited references, and (iii) the combined references must teach each and every limitation of the claimed invention. *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.,* 229 F.3d 1120, 1124-25 (Fed. Cir. 2000)

(internal citations omitted); *see also* MPEP § 2142. The motivation to combine the references may not be found in the applicants' disclosure itself, but rather, must come from one of three sources: (i) the nature of the problem to be solved, (ii) the references themselves, or (iii) the knowledge of those skilled in the art. *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998).

Claims 1-5 and 7-12 are non-obvious over Sasahara in view of McPherson for the following reasons: (1) neither reference teaches or suggests the use of α-starch and McPherson, if anything, teaches away from such use; and (2) McPherson does not teach a skin-core fiber particle and its teachings are not readily applicable to such a particle, such McPherson's reference to modified starch amounts to no more than mere awareness in the art, which is not sufficient to establish obviousness. *See Micro Chemical, Inc. v. Great Plains Chemical Co., Inc.*, 103 F.3d 1538 (Fed. Cir. 1997).

First, the Examiner has correctly acknowledged that Sasahara does not disclose the use of α-starch (Final Office Action, p. 3, ¶ 8). McPherson, too, fails to disclose the use of α-starch because the term "α-starch" does not appear anywhere in this reference in connection with the invention of McPherson. If anything, McPherson clearly teaches away from the use of α-starch, urging instead the use of unmodified starch, which has different properties from swellable α-starch. Also, McPherson does not suggest that α-starch may have been used with skin-core fiber litter particles. In fact, McPherson does not teach fiber-based

particles at all, but rather is directed to grain-based particles. Thus, even if McPherson suggested α-starch, and applicants do not admit that it does, McPherson does not do so in connection with a litter system comparable to that of the present invention.

Where one of the references cited by an Examiner teaches away from the claimed invention, there can be no motivation to the combine the references, and the references thereby cannot render the claimed invention obvious. *Tec Air, Inc. v. Denso Manufacturing Michigan Inc.*, 192 F.3d 1353, 1358 (Fed. Cir. 1999) citing *In re Fine*, 837 F.2d 1071, 1075 (Fed. Cir. 1988), *see also* MPEP §2145. A reference teaches away from the claimed invention if it suggests that the line of development flowing from the reference's disclosures is unlikely to be productive of the result sought by the applicant. *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994).

Even if McPherson is taken to imply that α-starch had been employed before, and applicants do not admit that it does, this teaching would provide not provide an expectation of success, because α-starch would have been used in connection with a different type of litter particle. *In re Vaeck,* 947 F.2d 488 (Fed. Cir. 1991) (Court finding applicants invention non-obvious because prior art references failed to provide both a suggestion and a reasonable expectation of success of practicing the claimed invention). Therefore, Sasahara and McPherson cannot be relied upon to reject any of the present claims as obvious.

Furthermore, there is no disclosure in Sasahara and/or McPherson that would have guided a person of ordinary skill in the art to have employed α-starch in the skin layer of Sasahara in particular. Sasahara discloses a two layer particle whereas McPherson discloses a single layer particle. For the sake of argument only, any unmodified starch used in McPherson (and none would be expected to be used since McPherson discourages the use of unmodified starch) would have been mixed in with the other components of the McPherson litter particle prior to pelletization. There is no information in either reference that would suggest isolating this single component from McPherson, which is described by McPherson as both unsuitable and ineffective for the presently claimed purpose of agglomeration, and then incorporating it into only the coating layer of Sasahara's litter particle. There is simply no disclosure in either reference that would have lead a person of ordinary skill in the art to have made this series of specific choices and modifications.

Second, mere awareness in the art is not sufficient to establish obviousness. *See Micro Chemical, Inc. v. Great Plains Chemical Co., Inc.*, 103 F.3d 1538 (Fed. Cir. 1997) *cert denied,* 521 U.S. 1122 (1997). ("A determination of obviousness must involve more than indiscriminately combining prior art; a motivation or suggestion to combine must exist."). Obviousness can only be established where there is some teaching, suggestion or motivation in the prior art that would have led a person of ordinary skill to combine or modify the references. *Karsten Mfg. Corp. v. Cleveland Golf Co.*, 242 F.3d 1376 (Fed. Cir. 2001). Absent some

teaching or motivation to combine the elements recited in two or more references, it is improper to predicate a rejection on the mere identification of individual components of the claimed invention. *In re Werner Kotzab*, 217 F.3d 1365, 1371 (Fed. Cir. 2000) ("findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed").

The Examiner states that McPherson

> is not relied upon for the invention disclosed therein, the reference is merely cited for showing that in prior art litters, the use of a pregelatinized starch is known and therefore would be a known material to those having ordinary skill in the art.

(Office Action, p. 2, ¶ 3). This is practically an admission by the Examiner that McPherson does not disclose α-starch in connection with skin-core fiber particles, as presently claimed. The Examiner thus has merely selected a single element from this reference, with apparent disregard for the requirement that some motivation or suggestion to combine the prior art must exist. Such a general citation to a reference that not only lacks the proper motivation, but also, in fact, teaches away from the claimed invention, is not sufficient to support a rejection for obviousness. The Examiner has failed to provide any real evidence as to why one of ordinary skill would be motivated to combine the references. *In re Dembiczak*, 175 F.3d 994, 1000 (Fed. Cir. 1999) ("This showing [motivation] must be clear and particular, and broad conclusory statements about the teaching of multiple references, standing alone, are not evidence."). Absent any suggestion in McPherson, and in

view of the fact that McPherson actually *teaches away* from the claimed invention, a person of ordinary skill would not have been motivated to combine McPherson's use of a modified starch (e.g., α-starch) with any other reference, let alone Sasahara in order to achieve the present invention.

The Examiner's naked assertion that Sasahara and McPherson teach each and every limitation of claims 1-5 and 7-12 is insufficient to establish obviousness. The proper standard for establishing obviousness requires a showing of motivation to combine the cited references. Absent a showing of motivation, the claims cannot be held to be obvious over the prior art. The Examiner has not provided any evidence regarding motivation to combine Sasahara and McPherson, but rather has at best selected and combined isolated elements found in the prior art in connection with different and incomparable products. Such a combination is improper to establish obviousness.

In view of the foregoing arguments, the rejection of claims 1-5 and 7-12 should be overturned because Sasahara and McPherson, either alone or in combination, cannot be relied upon to reject claims 1-5 and 7-12 as obvious.

(b) Claim 6 Is Non-Obvious

In the Final Rejection, the Examiner rejected claim 6 under 35 U.S.C. § 103(a) as being obvious over Sasahara in view of McPherson, and further in view of Chikazawa. Sashara and McPherson are discussed above; Chikazawa is discussed in further detail below.

Chikazawa discloses a pet litter consisting of pellets made primarily of tapioca or tapioca-corn starch without any fibers. The Chikazawa pellet may be coated with zeolite powder and additives (e.g., ferrous sulfate, colorants, antiseptics, agents for the prevention of decay, and preservatives) (col. 3, ll. 54-59; col. 4, ll. 15-23). Chikazawa does not teach or suggest the use of α-starch or any other modified starch and, in fact, fails to mention α-starch or modified starches anywhere in its disclosure. Instead, Chikazawa only discloses litter pellets made from native starch: specifically, unmodified tapioca and/or corn powder (col. 2, ll. 51-58). Additionally, Chikazawa does not teach or suggest the use of fibers or a skin-core litter particle, let alone such a particle that is fiber-based. Furthermore, the only outer layer suggested by Chikazawa is made from zeolite and additives or zeolite alone (col. 3, ll. 54-59; col. 4, ll. 15-23). Thus, there is no disclosure in this reference that teaches or suggests the use of any kind of starch, including α-starch, in the outer layer of a litter particle. Rather, if anything, Chikazawa teaches that starches should be limited to the core of a particle only.

Additionally, Chikazawa does not disclose that its litter particles agglomerate or clump together after absorbing excretions. In fact, Chikazawa states that its zeolite coating "contributes to the *avoidance* of the lumping tendency of the grains" (col. 2, ll. 32-33; emphasis added). The reference also describes the disposal of its soiled litter particles by stating that "the tapioca or tapioca-corn granules are dropped into water" (col. 4, ll. 47-52). There is no suggestion that a

clump of granules is formed and disposed of as a solidified mass. Rather, Chikazawa teaches that individual soiled granules are collected and disposed, without any suggestion that the individual granules were clumped together. Thus, there is no disclosure in Chikazawa that teaches or suggests that its litter particles agglomerate.

The Examiner rejected claim 6 as obvious over Sasahara in view of McPherson, and further in view of Chikazawa. The Examiner notes "that the applicant is correct that Chikazawa does not disclose tapioca being an alpha starch" (Final Office Action: p. 3, ¶ 5), and states that Chikazawa "was merely relied upon to show that tapioca is a known starch in the art of animal litters. As such, it is considered to be within the skill of an artisan in the art to look towards tapioca when determining a starch to pre-gelatinize for use in litters." *Id.* Nevertheless, the Examiner contends that it would have been obvious to have modified tapioca starch into tapioca α-starch in view of Chikazawa.

* * * * *

To establish a prima facie case of obviousness, the Examiner must show "some objective teaching in the prior art or knowledge generally available to one of ordinary skill in the art that would lead that individual to combine the relevant teachings of the references." *In re Fine*, 837 F.2d at 1074, *see also* MPEP §2143. Absent a motivation to combine the relevant teachings of the references, there can be no finding of obviousness. *In re Rouffet*, 149 F.3d at 1357.

Claim 6 is non-obvious over Sasahara in view of McPherson, and further in view of Chikazawa for the following reasons: (1) Chikazawa teaches away from the use of any starch in a skin layer; (2) none of the references teach or suggest the use of α-starch and McPherson in fact teaches away from such use; and (3) mere awareness in the art is not sufficient to establish obviousness.

First, Chikazawa discloses that its pellet may be formed entirely of tapioca or tapioca-corn. Thus, no skin layer is disclosed and, at any rate, the tapioca cannot be considered to be contained in a "skin layer" of such a single-component particle. Additionally, Chikazawa states that its pellet may be coated (the coating conceivable could be thought of as a "skin layer") with zeolite powder and additives such as ferrous sulfate, colorants, antiseptics, agents for the prevention of decay, and preservatives (col. 4, ll. 15-23). In this embodiment, the *core* layer of the Chikazawa pellet, *not* the skin layer, would contain tapioca. The skin layer of this embodiment would contain zeolite and additives. Thus, the disclosure in Chikazawa would not have motivated a person of ordinary skill in the art to use tapioca or any other starch (modified or not) in the skin layer of a particle. If anything, Chikazawa teaches that the starch is essential in the *core* of a particle. In contrast, the present claims recite a particle where α-starch is incorporated in the *skin* layer. Furthermore, there is no disclosure in Chikazawa or any of the cited references that would have motivated a person of ordinary skill to modify Chikazawa's tapioca starch into α-starch, and then selectively apply the α-starch to

the skin layer of a two-layer particle, while omitting it from the core. There is simply no guidance in Chikazawa that would have taught or motivated a person of ordinary skill to have made each of these distinct modifications to, and applications of, the teachings of Chikazawa. Because there would have been no motivation to combine Sasahara, McPherson, and Chikazawa, these references cannot be relied upon to reject claim 6 as obvious. *See In re Rouffet*, 149 F.3d at 1357.

Second, none of the cited references teaches or suggests the use of α-starch. As discussed above, the Examiner has acknowledged that Sasahara does not disclose α-starch (Final Office Action, p. 3, ¶ 3), and McPherson teaches away from α-starch, describing modified starches as both unsuitable and ineffective for agglomeration. Chikazawa, too, fails to disclose α-starch by only disclosing pellets made from native starch (col. 2, ll. 51-58) and also does not disclose any type of starch in the skin layer of the litter particles. Moreover, Chikazawa's native starch grains are combined with water and gelatinized as they are formed into pellets (col. 3, ll. 3-10), thereby forming pellets containing gelatinized starch rather than particles comprising pre-gelatinized starch grains such as α-starch. Thus, none of Sasahara, McPherson, or Chikazawa discloses α-starch, especially not in the skin layer of the particle.

Third, mere awareness in the art is not sufficient to establish obviousness. *See Micro Chemical, Inc. v. Great Plains Chemical Co., Inc.*, 103 F.3d 1538. Absent some teaching or motivation to combine the elements recited in two or

more references, it is improper to predicate a rejection on the mere identification of individual components of the claimed invention. *In re Werner Kotzab*, 217 F.3d 1365, 1371 (Fed. Cir. 2000).

The Examiner states:

> Chikazawa does not disclose tapioca being an alpha starch. However, this reference was merely relied upon to show that tapioca is a known starch in the art of animal litters. As such, it is considered to be within the skill of an artisan in the art to look towards tapioca when determining a starch to pre-gelatinize for use in litters.

(Final Office Action: p. 3, ¶ 5). First, we point out that the Examiner assumes premises she has not demonstrated. There is no suggestion whatsoever in the art to pregelatinize any starch, especially for use in the skin layer of a particle. Second, as with McPherson, the Examiner has failed to provide any real evidence or justification as to why one of ordinary skill in the art would have been motivated to combine Chikazawa with the other cited references. *In re Werner Kotzab*, 217 F.3d at 1371 ("findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed"). As discussed above, Chikazawa teaches away from the use of any starch, including α-starch, in the skin layer of a two-layer particle, and none of the references teach or suggest the use of α-starch (particularly McPherson, which teaches away from such use). Thus, the Examiner's general citation to Chikazawa as disclosing what was allegedly known in the art is insufficient to establish obviousness, which requires a showing of motivation to combine the cited references.

In view of the foregoing arguments, the rejection of claim 6 should be overturned because Sasahara, McPherson, and Chikazawa, either alone or in combination, cannot be relied upon to reject claim 6 as obvious.

(c) The Rejection of Claim 13 is Moot

The Examiner objected to claim 13 as lacking antecedent basis. Claim 13 has been canceled. Therefore, the rejection of this claim is moot.

(d) Claims 4 and 14 are Non-Obvious

All of the arguments set forth above with respect to the non-obviousness of claims 1-5 and 7-12 apply equally to the non-obviousness of claim 14. Additionally, claims 4 and 14 are not obvious over Sasahara, McPherson, and Chikazawa because: (1) none of the cited references teaches or suggests particular amounts of α-starch; and (2) Sasahara and Chikazawa do not teach or suggest the agglomeration of litter particles.

Sasahara fails to teach or suggest a litter particle that agglomerates. Rather, Sasahara discloses that its particles have the advantage of high shape stability, being able to absorb water from excretions and then transfer that water to the core of the particle, and transfer excess water to other particles. High shape stability strongly suggests that Sasahara's particles do not deform and do not agglomerate. Furthermore, Sasahara suggests that its particles, like prior art particles known to Sasahara, may be kept in an excrement container and regularly exchanged. In summary, there is no disclosure in Sasahara to teach or suggest that the particles themselves agglomerate and can be isolated and disposed while sparing the remaining unsoiled supply of litter.

Similarly, Chikazawa fails to teach or suggest that its litter particles agglomerate. Instead, Chikazawa refers to "the avoidance of the lumping tendency of the grains" (col. 2, ll. 32-33), and the disposal of soiled litter particles by dropping granules into water (col. 4, ll. 47-52). Thus, Chikazawa fails to disclose the agglomeration of its litter particles.

Claim 4 of the present application recites a specific range of ratios of α-starch to fibers in the skin layer of the particle. This specific range allows for the amount of α-starch to be sufficient to promote agglomeration. According to the specification, if the amount of α-starch is greater than the defined range, the α-starch may form a film on the surface of the particle, which may interfere with penetration of excretions into the particle core (p. 8, first full paragraph). If the amount of α-starch is less than the defined range, "the adhesiveness of the particles having absorbed excretions to bond to each other will be low" (p. 8, first full paragraph). Thus, claim 4 calls for a particular range of amounts of α-starch that is sufficient to promote agglomeration when the skin layer is wetted with excretions. New claim 14 expressly states that "the α-starch is present in an amount sufficient to promote agglomeration upon wetting of the skin layer."

First, as noted above, the Examiner has acknowledged that Sasahara does not disclose α-starch (Final Office Action, p. 3, ¶ 3). Therefore, this reference cannot possibly teach or suggest any particular amounts of α-starch, as recited in claim 14, and particularly not the ratios of α-starch to fibers that are recited in claim 4. Additionally, McPherson discloses particles made essentially from seed meal that do not have a skin layer. This reference also does not mention anything

about fibers. Thus, McPherson cannot possibly teach or suggest any ratios of any kind of starch to fibers, especially ratios of α-starch to fibers in the skin layer of a particle, as recited in claim 4. McPherson also does not teach or suggest the use of any particular amounts of α-starch that would be precisely needed to promote agglomeration in a skin-core fiber-based particle, as recited in claim 14. Lastly, Chikazawa makes no mention of fibers or a skin layer and therefore cannot possibly teach or suggest any ratios of any kind of starch to fibers, especially ratios of α-starch to fibers in the skin layer of a particle, as recited in claim 4. Similarly, Chikazawa does not teach or suggest the use of any particular amounts of α-starch that would be precisely needed to promote agglomeration in a skin-core fiber-based particle, as recited in claim 14.

Second, Sasahara and Chikazawa fail to disclose particles that agglomerate after absorbing moisture from excretions. In contrast, claims 4 and 14 of the present application describe an amount of α-starch that is sufficient to promote agglomeration. Claim 4 does this through its recitation of particular ratios of α-starch, and claim 14 does this through express functional language.

As discussed above, there is no disclosure in either reference to suggest that the Sasahara and/or Chikazawa particles agglomerate. Furthermore, McPherson expressly states that: (i) unmodified starches are preferred over modified starches (e.g., α-starch); and (ii) starches in general have not been found to promote agglomeration (col. 4, ll. 54-67). Thus, there is no disclosure in Sasahara, McPherson, or Chikazawa that would have motivated a person of ordinary skill in

the art to use α-starch in a litter particle in an amount sufficient to promote agglomeration. Rather, upon reading McPherson, a person of ordinary skill in the art would have been discouraged from using α-starch in such a manner. *See In re* Fine, 837 F.2d 1071, 1075 (Fed. Cir. 1988) (*citing W. L. Gore & Assoc. v. Garlock, Inc.,* 721 F.2d 1540, 1550 (Fed. Cir. 1983) (there can be no finding of obviousness where references deliberately avoid and warn against, rather than teach the applicant's claimed invention)).

In view of the foregoing arguments, claims 4 and 14 are non-obvious over Sasahara, McPherson, and Chikazawa, either alone or in combination.

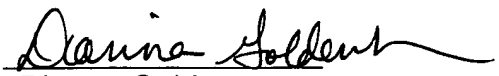
(e) Conclusion

The Examiner's proposed combination of Sasahara and McPherson does not render claims 1-12 and 14 obvious. On the contrary, Sasahara does not disclose litter particles that agglomerate and McPherson expressly teaches away from the use of α-starch to promote agglomeration. A person of ordinary skill in the art would have found no motivation in Sasahara and/or McPherson to have employed α-starch in the skin layer of a two-layer particle in order to promote agglomeration. Additionally, the combination of McPherson and Sasahara does not render the claimed invention obvious because mere awareness in the art is not adequate to establish obviousness. There is also no motivation to combine Chikazawa with either Sasahara or McPherson to arrive at the invention recited in claim 6. Lastly, none of the cited references teaches or suggests the particular amounts of α-starch recited in claims 4 and 14. Accordingly, claims 1-12 and 14 are non-obvious over the cited references.

(9) Appendix

A copy of pending claims 1-12 and 14 is attached as Exhibit A.

Respectfully submitted,

By: 
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EXHIBITS ACCOMPANYING APPEAL BRIEF

A. Pending Claims 1-12 and 14

B. NIOSH Pocket Guide to Chemical Hazards, *Starch*

C. Material Safety Data Sheet, *Polyvinyl Alcohol*

D. CHRISTOPHER K. MATHEWS & K.E. VAN HOLDE, BIOCHEMISTRY 285 (1990)

EXHIBIT A

Claim 1. (Previously Presented) An animal excretions-treating material comprising particles, each particle being composed of a core layer of fibers and a skin layer to cover the core layer, the skin layer containing α-starch and fibers.

Claim 2. (Previously Presented) The animal excretions-treating material as set forth in claim 1, wherein the fibers constituting the skin layer are short fibers having a mean fiber length in a range of 0.02 to 1 mm.

Claim 3. (Original) The animal excretions treating-material as set forth in claim 1, wherein the mean particle size of the α-starch in the skin layer is at most 0.25 mm.

Claim 4. (Currently Amended) The animal excretions-treating material as set forth in claim 1, wherein the ~~composition of the skin layer is in a~~ ratio of α-starch to fibers in the skin layer is in a range of 20:80 to 80:20 ~~20 to 80 and 80 to 20~~.

Claim 5. (Original) The animal excretions treating-material as set forth in claim 1, wherein the fibers in the skin layer are those of pulp.

Claim 6. (Previously Presented) The animal excretions-treating material as set forth in claim 1, wherein the α-starch in the skin layer is tapioca α-starch.

Claim 7. (Original) The animal excretions-treating material as set forth in claim 1, wherein the fibers in the core layer are those of pulp.

Claim 8. (Previously Presented) The animal excretions-treating material as set forth in claim 1, which has a bulk density in a range of 0.1 to 0.5 g/cm^3.

Claim 9. (Previously Presented) The animal excretions-treating material as set forth in claim 1, wherein the particle has a diameter in a range of 2 to 20 mm.

Claim 10. (Previously Presented) An animal excretions-treating material comprising particles, each particle being flushable in a toilet and composed of a core layer of fibers and a skin layer to cover the core layer, the skin layer containing α-starch and fibers to increase fluid absorption of each particle.

Claim 11. (Previously Presented) The animal excretions-treating material as set forth in claim 1, wherein the α-starch is contained only in the skin layer.

Claim 12. (Previously Presented) An animal excretions-treating material comprising particles, each particle being biodegradable in a septic tank and composed of a core layer of fibers and a skin layer to cover the core layer, the skin layer containing α-starch and short fibers of pulp having a mean fiber length in a

range of 0.02 to 1 mm, the composition of the skin layer being in a ratio of the α-starch to the short fibers in a range of 20:80 to 80:20.

Claim 13. (Canceled)

Claim 14. (New) An animal excretions-treating material comprising particles, each particle being composed of a core layer of fibers and a skin layer to cover the core layer, the skin layer containing α-starch and fibers, wherein the α-starch is present in an amount sufficient to promote agglomeration upon wetting of the skin layer.

NIOSH Pocket Guide to Chemical Hazards

Starch	**CAS** 9005-25-8
$(C_6H_{10}O_5)_n$	**RTECS** GM5090000
Synonyms & Trade Names Corn starch, Rice starch, Sorghum gum, alpha-Starch, Starch gum, Tapioca starch	**DOT ID & Guide**

Exposure Limits	NIOSH REL: TWA 10 mg/m^3 (total) TWA 5 mg/m^3 (resp)
	OSHA PEL: TWA 15 mg/m^3 (total) TWA 5 mg/m^3 (resp)

IDLH N.D. See: IDLH INDEX	**Conversion**

Physical Description
Fine, white, odorless powder. [Note: A carbohydrate polymer composed of 25% amylose & 75% amylpectin.]

MW: varies	BP: Decomposes	MLT: Decomposes	Sol: Insoluble
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 1.45
Fl.P: NA	UEL: NA	LEL: NA	MEC: 50 g/m^3

Noncombustible Solid, but may form explosive mixture with air.

Incompatibilities & Reactivities
Oxidizers, acids, iodine, alkalis

Measurement Methods
NIOSH 0500, 0600
See: NMAM or OSHA Methods

Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: Daily Remove: When wet or contaminated Change: Daily	**First Aid** (See procedures) Eye: Irrigate immediately Skin: Soap wash Breathing: Fresh air Swallow: Medical attention immediately

Important additional information about respirator selection
Respirator Recommendations To be added later

Exposure Routes inhalation, ingestion, skin and/or eye contact

Symptoms Irritation eyes, skin, mucous membrane; cough, chest pain; dermatitis; rhinorrhea (discharge of thin mucus)

Target Organs Eyes, skin, respiratory system

See also: INTRODUCTION

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MSDS Number: **P5282** * * * * * *Effective Date: 05/14/03* * * * * * *Supercedes: 11/02/01*

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865

J.T.Baker

24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300
National Response in Canada
CANUTEC: 613-996-6666
Outside U.S. And Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

POLYVINYL ALCOHOL

1. Product Identification

Synonyms: Polyvinyl alcohol; PVA; Polyvinol; ethenol homopolymer
CAS No.: 9002-89-5
Molecular Weight: Not applicable to mixtures.
Chemical Formula: [-CH2CHOH-]n
Product Codes: U227, U228, U229, U232

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Methyl Alcohol	67-56-1	< 1%	No
Polyvinyl Alcohol	9002-89-5	> 95%	Yes

3. Hazards Identification

BIOCHEMISTRY

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Oregon State University

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Oregon State University

Illustration concepts by Audre W. Newman
with art contributions from Irving Geis

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Cover

Dimer of *trp* repressor protein, with bound tryptophan (in blue). The protein binds to DNA and regulates expression of the *trp* genes that control tryptophan biosynthesis. Crystal structure by Paul Sigler et al.; image by Jane and David Richardson.

Frontispiece

Figure 11.15a The T state of aspartate transcarbamoylase, as determined by x-ray diffraction.

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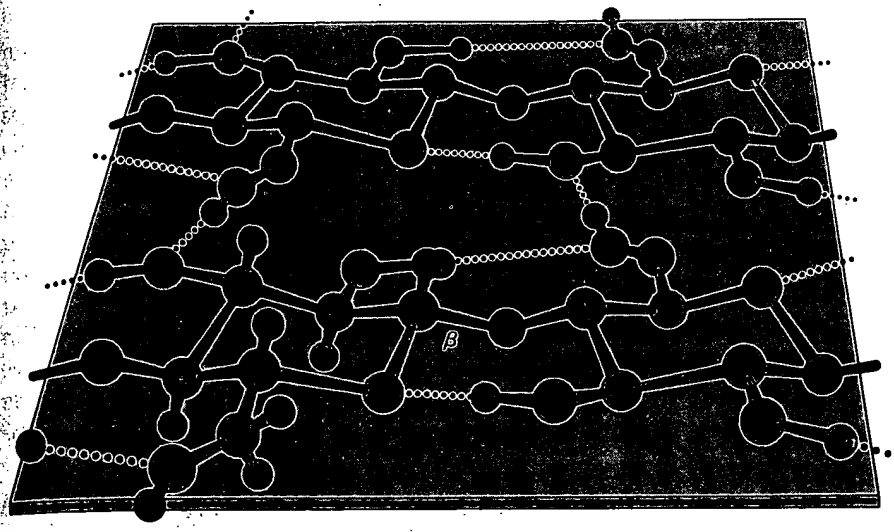
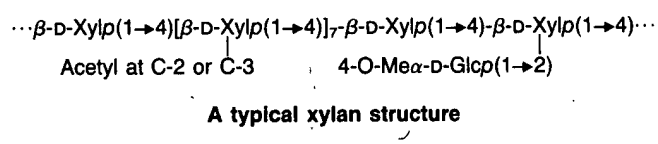


Figure 8.23
Cellulose structure. The $\beta(1\rightarrow4)$ linkages of cellulose generate a planar structure. The parallel cellulose chains are linked together by a network of hydrogen bonds.

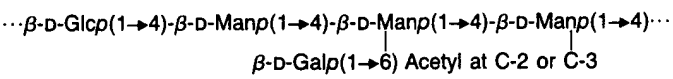
CELLULOSE. The major polysaccharide in woody and fibrous plants (like trees and grasses), cellulose is the most abundant single polymer in the biosphere. Like amylose, cellulose is a linear polymer of D-glucose (and hence is also a glucan), but in this case the sugar residues are connected by $\beta(1\rightarrow4)$ linkages (Figure 8.23). This seemingly small difference from starch has remarkable structural consequences. Cellulose can exist as fully extended chains, with each glucose residue flipped by 180° with respect to its neighbor. In this extended form, the chains can form ribbons that pack side by side with a network of hydrogen bonds within and between them. This arrangement is reminiscent of the β-sheet structure in silk fibroin, and as in fibroin, the fibrils of cellulose have great mechanical strength but limited extensibility.

The small difference in linkage in cellulose and starch has another important consequence: animal enzymes that are able to catalyze the cleavage of the $\alpha(1\rightarrow4)$ link in starch cannot cleave cellulose. Ruminants such as cows can digest cellulose only because they contain in their digestive tracts symbiotic bacteria that produce the necessary **cellulases.** Termites manage to eat woody substances in a similar fashion, for they harbor in their guts protozoans capable of cellulose digestion. Many fungi also produce such enzymes, which is why mushrooms can live on wood as a carbon source.

It should not be presumed that the fibrous parts of plants are made up exclusively from cellulose. A variety of other polysaccharides are present in plant cell walls. These include the **xylans,** which are polymers with $\beta(1\rightarrow4)$-linked D-xylopyranose, often with substituent groups attached; the **glucomannans;** and many other polymers. Often these polysaccharides are grouped together under the term hemicellulose.



A typical xylan structure



A typical glucomannan structure